NEW SPECIES OF LEAFHOPPERS IN THE GENERA *THAGRIA* (THAGRIINI) AND *THARRA* (THARRINI) FROM INDONESIA (HOMOPTERA:CICADELLIDAE:COELIDIINAE)[1]

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ABSTRACT: Four new species of leafhoppers from Indonesia are described and illustrated. These are *Thagria checkettsi* and *T. excavata* in the tribe Thagriini and *Tharra bucina* and *T. emilyae* in the tribe Tharrini. The biogeography of the genera is briefly reviewed.

This paper describes two new species in each of the genera *Thagria* (Thagriini) and *Tharra* (Tharrini) as part of material collected by members of the 1985 project WALLACE sponsored by the Royal Entomological Society of London and the Indonesian Institute of Sciences (Results of Project WALLACE No. 134) (Knight 1988). Previous studies of *Thagria* covered 166 species (Kwon and Lee 1979b, Nielson 1977a, 1980a, 1980b, 1980c, 1980d, 1982c, 1986c, Zhang, 1990a) and of *Tharra*, 101 species (Nielson 1975a, 1982b). Speciation and biodiversity are extensive in both groups and they represent the most numerous among coelidiine leafhoppers in the Oriental and Australian regions.

Thagria has no known close relatives at the tribal level. The unique male genital and clypeal-clypellate characters set the group well apart from all other tribes in the subfamily. *Tharra* has affinities to the Neotropical Youngolidiini and it may represent the stem of that group which may have arisen during neocontinental development. The concealed male genital characters are uniquely different from all other tribes. The basal segmentation of the male plates and the head characters clearly place the group nearest to the tribe Youngolidiini.

Nearly two-thirds of the known species of *Thagria* occur in the Oriental region whereas nearly one-third occupy the Australian region. Four species have inroads into the Palaearctic region in the southern most islands of Japan and adjacent Korea. In the Oriental region proper, speciation reaches its highest level in the Indo-Malayan subregion followed by a moderate level in the Indo-Chinese subregion. The faunal species drop precipitously in the Srilankenese and Indian subregions. In the Australian region, speciation is

[1]Received November 19, 1991. Accepted March 10, 1992.

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epitomized in the Austro-Malayan subregion. Only two species have ventured into the Polynesian subregion and none are known for the Australian and New Zealand subregions.

In the genus *Tharra* about 90% of the species occupy the Australian region; the remainder are in the Oriental region. In the Australian region proper, speciation is most prevalent in and nearly equally divided between the Austro-Malayan and Polynesian subregions. Only four species occur in the Australian subregion and these are restricted to the northern state of Queensland. Only 10 species are known from the Oriental region and they are exclusive to the Indo-Malayan subregion.

Lack of host records has made it very difficult to clue into the origin of these groups and their speciation processes, particularly in the genus *Thagria.* The eastern Oriental region (Indo-Malayan subregion) and western Australian region (Austro-Malayan subregion), where equal numbers of species of *Thagria* are present, provide a puzzling scenario in the origin of the genus. The genus *Tharra* is likely of Austro-Malayan origin augmented by profuse speciation therein and in the Polynesian subregion.

Thagria checksettsi, new species

(Figs. 1-4)

Length.—Male 7.70 mm.

General color piceous with numerous small ochraceous spots on pronotum, ochraceous markings in clavus and costa of forewings; crown piceous with large oval spot basally; face piceous. Similar to *similis* Nielson in male genital characters.

Head large, narrower than pronotum, somewhat conical in outline; crown narrow, basal width narrower than width of eyes, lateral margins converging basally, surface striate, depressed medially in basal 2/3; eyes large, elongate ovoid; pronotum and scutellum large, each longer than median length of crown; forewing and venation typical; clypeus long and narrow; clypellus narrow, base flattened.

Male.—Pygofer in lateral view with long broad caudoventral lobe, dorsal margin armed with long, narrow process ventrally and broad, ornate lobe dorsally, lobe with narrow curved process apically, small sharp spine ventrally; tenth segment with long narrow process, curved ventrally at middle (Fig. 1); aedeagus symmetrical, short, about 1/2 as long as ventral paraphysis; ventral paraphysis partially asymmetrical, long, broad basally and abruptly narrowed in distal 2/3 view (Fig. 3), narrowed and curved in lateral view with swelling subapically (Fig. 4); style long, reaching to apex of ventral paraphysis, apical 1/5 triangulate in dorsal view (Fig. 3).

Female.—Unknown.

Holotype (male).—INDONESIA: Sulawesi Utara, G. Mogonipa summit, 1008 m., Dumogo-Bone N.P., 20.V.1985, Project WALLACE, Royal Ent. Soc. London, BM 1985-10 (BMNH).

Remarks.-This species, which keys near *similis*, can be distinguished by the more ornate and extra processes on the caudorsal margin of the pygofer and by the apically triangulate style. I name this species for my son-in-law, Daniel Scott Checketts.

Thagria excavata, new species

(Figs. 5-8)

Length:—Male 7.70 mm., female 8.40 mm.

General color deep fuscous with several small to large faint ochraceous spots in cells of forewings, narrow transverse ochraceous band subapically. Similar to *pala* Nielson and *ventrocarina* Nielson in male genital characters.

Head large, narrower than pronotum; crown broad, about as wide as eye, surface longitudinally striate, depressed on either side of middle in basal half; eyes large, semiglobular; pronotum short, median length less than median length of crown; scutellum large, longer than crown; forewings and venation typical; clypeus long and narrow; clypellus narrow, base flattened.

Male.—Pygofer in lateral view with large caudoventral lobe, lobe excavated apically, with short dorsal spine on apicodorsal margin, long narrow process arising from ventral margin, caudodorsal margin with short broad arrow-shaped process (Fig. 5); tenth segment with two ventral processes; ventral paraphysis large and broad, with pair of laterobasal spines projecting mesally, pair of lateroapical processes projecting distally and median process excised distally (Fig. 6), paraphysis excavated subbasally in ventral margin and apically in lateral view (Fig. 7); style very short (Fig. 8).

Female.-Seventh sternum long, about twice as long as preceding segment, caudal margin sinuate.

Holotype (male).—INDONESIA: Sulawesi Utara, Dumoga-Bone N.P., —.I.1985, lowland forest, 200-300 m., Royal Ent. Soc. London, Project WALLACE, B.M. 1985-10 (BMNH). Allotype female, same data as holotype except —.III.1985 (BMNH).

Remarks.—This species keys near *pala* in my 1977 paper and can be easily separated by the excavation on the apex of the caudoventral lobe of the pygofer and apex of the ventral paraphysis.

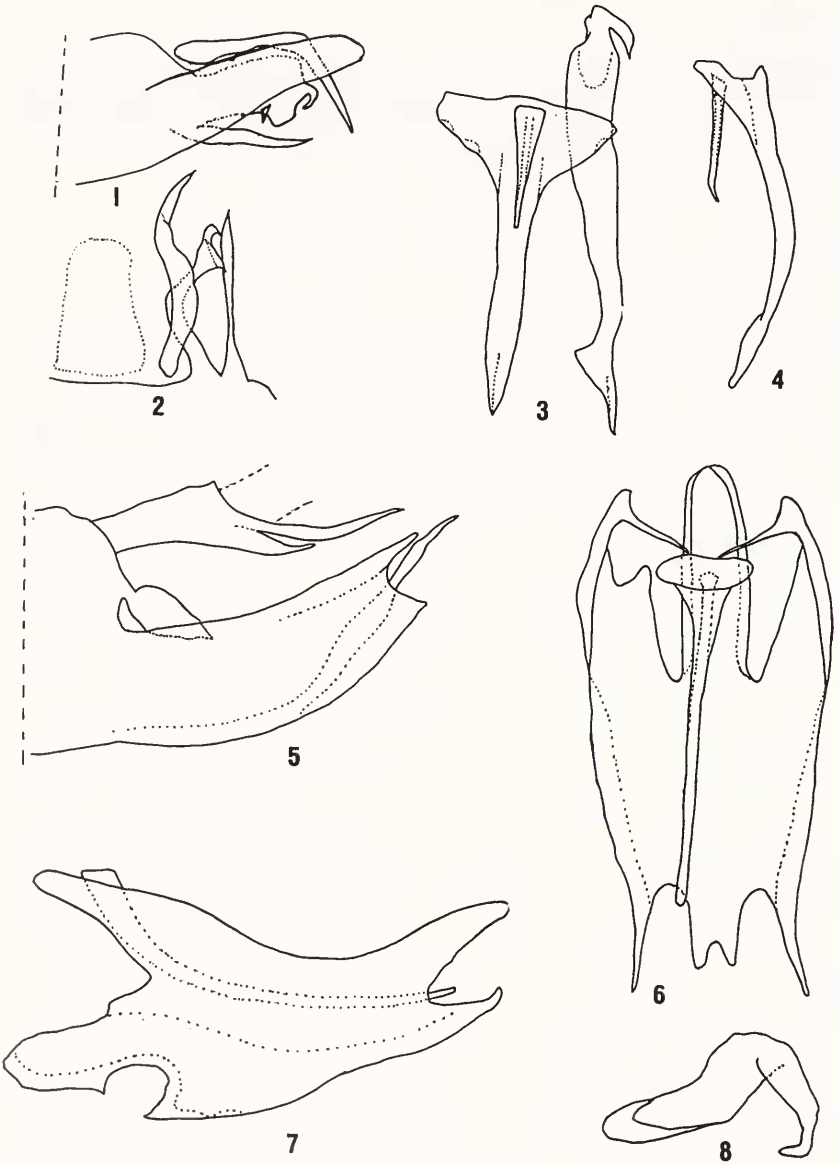
Tharra bucina, new species

Figs. (9-12)

Length.—Male 6.40 mm.

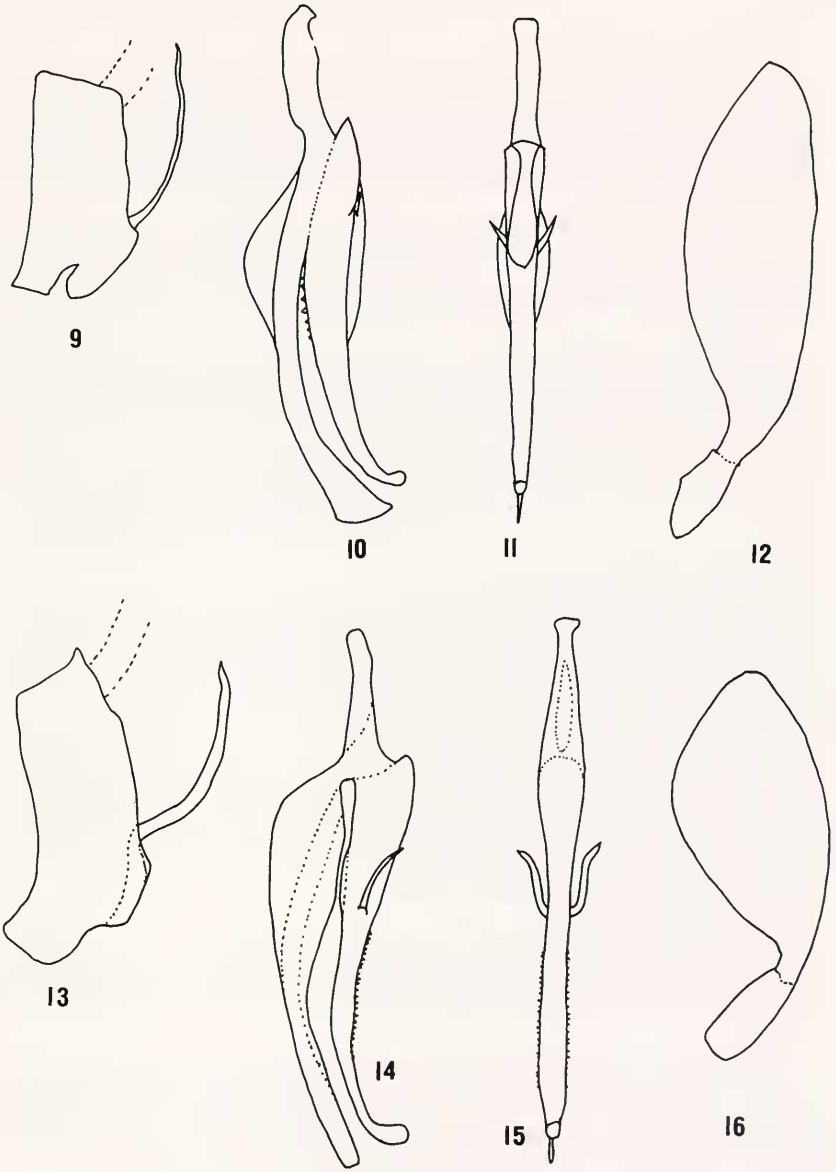
General color ochraceous to fuscous; clavus with triangular spot near middle, irregular pale area distad of clavus; pronotum with very small fuscous spots. Similar to *marlatti* Nielson in male genital characters.

Head narrower than pronotum, crown strongly produced beyond anterior margin of eyes, conical apically, elevated above level of eyes, surface striate, narrower than width of eye; pronotum shorter than crown; scutellum longer than pronotum; forewings and venation typical; clypeus and clypellus typical.



Figs. 1-4. *Thagria checksettsi*, n. sp. 1. Male pygofer & 10th segment, lateral view. 2. Pygofer and 10th segment processes, dorsal view. 3. Aedeagus, ventral paraphysis and style, dorsal view. 4. Aedeagus and ventral paraphysis, lateral view.

Figs. 5-8. *Thagria excavata*, n. sp. 5. Male pygofer, lateral view. 6. Aedeagus and ventral paraphysis, dorsal view. 7. Aedeagus and ventral paraphysis, lateral view. 8. Style, dorsal view.



Figs. 9-12. *Tharra bucina*, n. sp. 9. Male pygofer, lateral view. 10. Aedeagus, lateral view. 11. Aedeagus, dorsal view. 12. Plate, lateral view.

Figs. 13-16. *Tharra emilyae*, n. sp. 13. Male pygofer, lateral view. 14. Aedeagus, lateral view. 15. Aedeagus, dorsal view. 16. Plate, lateral view.

Male.—Pygofer in lateral view with long, very narrow caudoventral process, process with irregular margins and extending beyond dorsal margin of pygofer (Fig. 9); aedeagus symmetrical, dorsal appendage long and broad, with pair of spines near base on dorsal margin, flanged laterally along middle of dorsal margin, toothed along middle of ventral margin, ventral appendage long, trumpet-shaped distally with ventral keel in basal half (Figs. 10 & 11); plate long and elliptical (Fig. 12).

Female.—Unknown.

Holotype (male).—INDONESIA: Sulawesi Utara, Dumoga-Bone N.P>, Torault nr. base camp, 200 m., —III.1985, J. H. Martin, Royal Ent. Soc. London, Project WALLACE, B.M. 1985-10 (BMNH). Paratype, 1 male, same data as holotype except Gng. Ambang nr. Kotamogagu, Fog 7, 1200 m., 18.II.1985 (author's collection).

Remarks.—This species can be distinguished from *marlatti* by its longer head, by presence of a dorsal flange on the dorsal appendage and ventral keel on the ventral appendage of the aedeagus.

Tharra emilyae, new species

(Figs. 13-16)

Length.—Male 6.40 mm., female 7.30 mm.

General color fuscous with ochraceous head, pronotum, scutellum and basal half of clavus of forewings. Similar to *costata* Nielson in male genital characters.

Head narrower than pronotum; crown produced distally to about 1/3 of its entire median length beyond anterior margin of eyes, narrower than width of eye, elevated, surface striate; pronotum shorter than crown; scutellum longer than pronotum; forewings and venation typical; clypeus and clypellus typical.

Male.—Pygofer in lateral view with long narrow caudoventral process, process nearly reaching to dorsal margin of pygofer (Fig. 13); aedeagus symmetrical, dorsal appendage long, broad in basal 1/3, tapered toward slightly enlarged and curved apex, with long spine subbasally, arising from each side of lateral margin and projecting basally, dorsal margin dentate in middle 1/3, ventral appendage broad basally, tapered distally to truncate apex (Fig. 14, 15); plate broad in middle 1/3 (Fig. 16).

Female.—Seventh sternum large, about twice as long as preceding segment, caudal margin broadly rounded.

Holotype (male).—INDONESIA: Sulawesi Utara, Domoga-Bone N.P., —.V.1985, at light, Clark's camp, 1140 m., J. H. Martin, Royal Ent. Soc. London, Project WALLACE, B.M. 1985-10 (BMNH). Allotype female, same data as holotype (BMNH). Paratype, 1 male, 1 female, same data as holotype (author's collection).

Remarks.—This species can be distinguished from *costata* by the broader base of the ventral appendage of the aedeagus, by the dentate dorsal margin of the dorsal appendage, and by the broader plate. This species is named for my granddaughter, Emily Nicole Hammer.

ACKNOWLEDGMENTS

I wish to thank W. J. Knight, The Natural History Museum, London for loan of the specimens and for his helpful comments in improving the contents of the paper. This research was supported in part by endowment funds from the Monte L. Bean Life Science Museum for which I am grateful.

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